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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,626	08/31/2001	Sei Tsunoda	213480US0	8767

22850 7590 03/01/2004

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.  
1940 DUKE STREET  
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EXAMINER

HAMLIN, DERRICK G

ART UNIT	PAPER NUMBER
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1751

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/942,626

Applicant(s)

TUSUNODA ET AL

Examiner

Derrick G. Hamlin

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau. (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Both claims require the material have the resistance of claim 1, however they do not require the material used be the material of claim 1. Therefore, other materials with the same resistance of claim 1 would be included. The claim does not clearly set forth the metes and bounds of the patent protection desired.

Claim 2 is also objected to because of the following informalities: It claims "an insulating film between semiconductor layers" as it claims the same device as claim 3. It is the examiners position that the applicant is claiming, "an insulating (film for use as a layer) between semiconductor layers". Appropriate correction or clarification is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Evaluations of level of ordinary skill in the art requires consideration of factors such as various prior art approaches employed, types of problems encountered in the art, rapidity with which innovations are made, sophistication of technology involved, educational background of those actively working in the field, commercial success, failure of others, and the inventor's educational level.

The "person having ordinary skill" in this art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. The references of record in this case reasonably reflect this level of skill.

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paine, Jr. et al. (5,188,757).

Paine discloses a polymeric B-aminoborazene compounds suitable for pyrolytic conversion to boron nitride. The B-aminoborazine compounds are preferably mixed with an organic solvent and a cross-linking agent to form a polymeric gel. The polymeric gel is then pyrolyzed to form boron nitride. The polymeric gel is useful to coat various forms and materials. (abstract, see structures at col. 9, lines 1-15)

The reference further teaches that the the polymeric precursor gels can be further processed to substantially remove the solvent by utilizing decantation, vacuum evaporation, sol-gel and aerogel (critical-point drying) techniques, common to the art, for processing other types of gels. The sol-gel and aerogel techniques have been used extensively for the formation of coatings and films in glass (SiO<sub>2</sub>) technology, but they have not been used extensively in the art for non-oxide ceramic processing. (col. 8, lines 20-28)

The reference further teaches, boron nitride has a high melting point (3000.degree C), high anisotropic thermal conductivity, excellent dielectric properties, low chemical reactivity and high temperature semiconductor characteristics. Applications for hexagonal boron nitride include crucibles for metal evaporation, transistor heat sinks, nuclear reactor control rods, high temperature (800.degree C) solid lubricants, metal corrosion resistant coatings and ceramic fiber coatings. (col. 1, lines 33-39)

With respect to claims 1-3 the reference fails to teach that the material has a low dielectric constant. With respect to claims 2 and 3 the reference also fails to teach that the material is disposed between semiconductor layers.

Although the reference fails to teach that the material has a low dielectric constant, the reference does teach that the materials provide excellent dielectric properties. Additionally, one would have a reasonable expectation that the materials would have the same properties as they are made from the same materials. Although the reference fails to teach that the material is disposed between semiconductor layers, it does teach that the material is used in the semi conductor art and that it is useful as a coatings on films in glass such as SiO<sub>2</sub>, a know semi conductor.

Therefore, it would have been in the preview of the skilled artisan to create the instantly claimed dielectric constant material as the reference teaches a material made from borazine of the same structure.

***Double Patenting***

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The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-3 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 6 and 8 of U.S. Patent No. 6,458,719. Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim the same materials in different ways.

Both discloses a low dielectric constant film having a thermal resistance comprising molecules comprising boron, nitrogen, and hydrogen, wherein the film is between semiconductor layers, forming a semiconductor device.

The instant application claims borazine compounds of specific structures and the reference claims the borazine compounds as ratios. The structures of instant application have ratios that fall within those the applicant has already claimed in the reference '719, for which applicant has received a patent.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick G. Hamlin whose telephone number is (571) 272-1317. The examiner can normally be reached on Monday-Fridays from ~8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Yogendra Gupta, can be reached on (571) 272-1316. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Derrick G. Hamlin

2/20/04



**CHARLES BOYER**  
**PRIMARY EXAMINER**

